U.S. ARMY TECHNICAL CENTER FOR EXPLOSIVES SAFETY

EXPLOSIVES SAFETY

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ASSOCIATE DIRECTOR NOTES

The first Tri-Service Explosives Safety Council (TSESC) meeting was held at the Air Force Safety Agency (AFSA), Norton Air Force Base (AFB), CA on 16 January 1992. There is agreement that the Army, Navy, and Air Force explosives safety and weapons safety communities need a common approach to address many of the complex issues we face. The operations in Southwest Asia (SWA) amplified the need for developing closer ties in policy development and on the ground applications. We recognize there are obvious mission differences, but also many common needs in applying the DOD Ammunition and Explosives Safety Standards. This Tri-Service Council can address them.

We are in the process of developing a charter and a memorandum of understanding (MOU) to institutionalize the council. We will keep the community informed of our progress and activities.

One of the many areas of agreement by all at the first TSESC meeting, and one directly related to this bulletin, was that the services need to exchange information articles and publish them in the various safety publications. I encourage anyone out there having information we can develop into an article to promote explosives safety to send it to us. Our distribution covers many Navy and Air Force organizations as well as the Army; some 5000 plus addressees in total. We can get the word out! We will assure proper coordination with the appropriate Service Director or Chief of Safety occurs before publication.

We are excited over the tri-service explosives safety cooperative efforts to date and consider much can be gained in support of the Department of Defense (DOD) mission in this time of downsizing and resource limitations. A concerted effort is key and can lead to many successes in the challenging area of explosives and weapons safety management.

by: Gary W. Abrisz
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ACCEPTED METHODS TO SUPPORT ELECTRICAL SERVICE POWER LINES

In the last three years, the Department of Defense Explosives Safety Board (DDESB) has cited 54 installations for having electrical lines too close to potential explosive sites (PES), a violation of DOD 6055.9-STD, July 1984, Ammunition and Explosives Safety Standards.

Four alternatives have been accepted by the DDESB as countermeasures to ensure that energized lines on breaking cannot come into contact with the PES or its appurtenances. These are messenger supported wiring, ground-fault circuit interrupters, weighted triangle line separators or installation of additional electrical poles.

Messenger supported wiring consists of an exposed wiring support system using a non-energized wire to support insulated conductors. This system can consist of a messenger wire with rings and saddles for conductor support, a messenger with a field-installed lashing material for conductor support, factory-assembled aerial cable or multiplex cables utilizing a bare conductor (factory assembled and twisted with one or more insulated conductors, such as duplex, triplex, or quadruplex type of construction).

A ground-fault circuit-interrupter is a device which operates to cause a disconnecting means to open all ungrounded conductors of the faulted circuit. This protection is provided at current levels less than those required to protect conductors from damage through the operation of a supply circuit overcurrent device.

A weighted triangle line separator is a method to ensure broken lines will be pulled down instead of allowing the energized lines to contact the PES.

The first three alternatives may be utilized by installations to correct DDESB deficiencies in lieu of the accepted practice of erecting additional electrical poles to shorten wire spans between preexisting electrical poles. If one or a combination of the above alternatives are to be used, and if it is an issue within a site plan/safety submission, the site

plan/safety submission should indicate what type of loads (wind) the system is designed to protect against and the type of loads that could be reasonably expected. The same approach should be taken when responding to explosives safety surveys.

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GUIDE FOR USE OF 12-INCH SUBSTANTIAL DIVIDING WALLS (SDWs) FOR PROTECTION FROM REMOTE OPERATIONS

The Army has recently produced a field guide to allow installation personnel to determine personnel protection from remote operations using 12-inch SDWs. Qualified engineers and others familiar with structural response to explosions can use the guide. Copies of the guide may be requested from Director, U.S. Army Defense Ammunition Center and School, Attn: SMCAC-ESM, Savanna, Il 61074-9639

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MICROCIRCUIT TECHNOLOGY IN LOGISTICS APPLICATIONS (MITLA) AND AMMUNITION SAFETY

The term MITLA is likely to be new to many in the ammunition business, but probably not for long. The MITLA equipment has been used with success at Red River Army Depot (RRAD) for certain non-ammunition operations. This success has translated into considering MITLA applications for ammunition operations.

MITLA is the use of small rugged portable memory/logic microcircuit devices which receive, retain, and transmit logistics data in an automated form. The equipment is being provided by commercial vendors and is currently not standardized for Department of Defense (DOD) use. The microcircuits and hardware do not present a hazard to ammunition. However, the data transmission uses radio frequencies (RF) to operate and as such is a potential hazard to ammunition with electroexplosive devices (EEDs). As well, the RF has the potential of degrading the performance and reliability of electronic circuits and solid-state devices contained in ammunition.

MITLA is presently being applied to and evaluated for ammunition retrograde shipments from Southwest Asia (SWA). If the concepts prove to be effective for ammunition operations, MITLA will undoubtedly be considered for routine use with ammunition in the future. The SWA retrograde has included MITLA equipment to track movement of ammunition tractors. Conservative safety restrictions were placed on the use of the RF devices to reduce the associated risks during concept validation.

Future MITLA uses could include the placement of microcircuit devices on the containers or pallets of ammunition. These MITLA "tags" will be read remotely by "readers" also using RF. The equipment proposed for use will be subject to safety restrictions to ensure it is not creating a hazard to the ammunition. These restrictions may require placing the devices in specific locations, providing shielding, or maintaining a specified distance between the devices and ammunition. Several current explosives safety publications provide users with safe operating limits for RF devices such as portable radios. The use of tables, such as those in TM 9-1300-206 (tables C1-3), provide the minimum safe distance to be maintained between RF devices and operations involving EEDs.

The USATCES is working with several other DA organizations in an effort to resolve the MITLA explosives safety issues. As an example, the Project Manager-Ammunition Logistics (PM-AMMOLOG) funded an analysis of specific MITLA equipment in an attempt to develop a threshold level of RF energy for MITLA equipment. The analysis, conducted by U.S. Army Armament Research, Development and Engineering Center (ARDEC) provided essential data to allow the safe use of MITLA RF devices in SWA.

The USATCES will continue to be involved with the development of the MITLA concept for ammunition and explosives.

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ELECTRICAL LINES

Paragraph E2 of DOD 6055.9-STD, July 1984, Ammunition and Explosives Safety Standards, states, "Electric service lines required to be in close proximity to an explosives operating facility shall be no closer to that facility than the length of the lines between the poles or towers supporting the lines, unless an effective means is provided to ensure that energized lines on breaking cannot come into contact with the facility or its appurtenances."

Effective means have been identified as:

a. Cradles under the lines which will prevent the line(s) from coming into contact with the structure.

b. An insulated steel line which strengthens and/or supports the electric line.

c. Weights placed at various points on the lines which will pull the line down if it would break.

d. An automatic shutoff device which would sense an electrical power line break and turn off the power.

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MATERIAL SAFETY DATA SHEETS (MSDS) FOR WEBSTER'S REAGENT

Webster's Reagent is commonly used to detect trinitrotoluene (TNT) contamination on residue material. It is a solution of potassium hydroxide or sodium hydroxide in methanol or ethanol. Generally, it is prepared locally at the installation's chemistry laboratory. Since Webster's Reagent is a solution (not a compound), a separate MSDS is not needed for it. The requirement for an MSDS can be satisfied by posting the MSDS for the particular hydroxide and the MSDS for the particular alcohol together with a cover sheet explaining that Webster's Reagent is a mixture of these two chemicals (not a new compound due to the interaction between the two chemicals) and the effects of Webster's Reagent would not be different than the effects of the individual components. Webster's Reagent should be stored in an approved flammable storage cabinet and the containers should be labeled with the proper Hazardous Chemical Warning Label (DD 2521 or DD 2522). Remember when using Webster's Reagent that it does not detect all types of explosives, just those that are similar in chemical structure to TNT.

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ONLINE PATRON ACCESS CATALOG

It's here! The long awaited IBM RISC/6000 minicomputer arrived and was installed in December. This completes our requirement for hardware for an online patron access catalog (OPAC). Its capability for rapid data processing, and simultaneous multi-user access make the 6000 an excellent host system. By dialing up via a modem or data adapter, or logging on to the USADACS minicomputer, users will be able to access the online catalog for explosives safety publications and accident/incident data.

We are currently in the process of completing the following:

- Loading the Scientific and Technical Information Library Automation System (STILAS) software onto the new system.
- Converting publications records into new formats before uploading them to STILAS.
- Training for staff on how to use the system.

After we become familar with the new system and test it for final modifications we will begin the process of registering users for online access.

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The EXPLOSIVES SAFETY BULLETIN targets the ammunition/explosives community. It is printed in Savanna, Illinois.

If you wish to submit an article that is of interest to the ammunition/explosives community, or if you have a request for more copies of the bulletin, please forward it to: Director, U.S. Army Technical Center for Explosives Safety, Attn: SMCAC-ESM, Savanna, Il 61074-9639 or call us at DSN 585-8745, commercial (815) 273-8745.

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